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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/446,320	02/24/2000	WOLFGANG JANTZEN	LI-71472	2152
7590 11/18/2004			EXAMINER	
MICHAEL M RICKIN ABB AUTOMATION INC 29801 EUCLID AVENUE WICKLIFFE, OH 44092			ABELSON, RONALD B	
			ART UNIT	PAPER NUMBER
			2666	

DATE MAILED: 11/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/446,320

Applicant(s)

JANTZEN, WOLFGANG

Examiner

Ronald Abelson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 August 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-9, 13 ^{and 12-14} ~~and 14~~ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-9, 13 ^{and 12-14} ~~and 14~~ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 February 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 5, 9 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Jantzen (DE 19,513,318). For this office action, the English language translation was used.

Regarding claim 12, Jantzen teaches a method and apparatus for a redundant serial bus having $n > 1$ parallel bus lines for redundant networking (fig. 1 lines 11, 12, pg. 3 lines 1-3) of bus subscribers (fig. 1 box 23, 24, 25, 26) each having a single bus communications interface (fig. 1 box 26 has a single interface connecting it to box 36).

The system comprises a redundancy means (fig. 1 box 36), which can be connected upstream, having n interfaces for connection to said n parallel bus lines (fig. 1 see inputs from busses 11, 12 to box 36) and one interface for connection to the single bus communications interface of at least one bus

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subscriber (fig. 1 line see single connection between box 36 and subscriber 26). Note, redundancy means also exist for boxes 33-35.

The system comprises a redundancy means (fig. 1 box 36) which can be connected upstream having a receiving end comprising an input stage at least for each of said bus lines (fig. 1 box 36 input stage is for data coming from lines 11 and 12 to line 46), an evaluation stage (pg. 8 last line - pg. 4 line 3) and an output stage (fig. 1 box 36 output stage is for data coming to lines 11 and 12 from line 46) for all the bus lines.

The system comprises an evaluation stage has means for determining criteria of a data stream other than the presence or absence of data for a period of time and the content of said data stream for selecting one of the bus lines as the receiving line based on, said criteria (pg. 8 lines 3 - 7).

The system comprises a redundancy means that can be connected upstream having a transmitting end comprising a driver for each of said bus lines (fig. 1 box 33-36, pg. 6 lines 16-18).

Regarding claim 5, a means for time evaluation (pg. 5 lines 1-5), assessment of the state of the receiving lines (pg. 4 21-24), and line selection (pg. 4 21-24).

Regarding claim 9, at least one bus subscriber is equipped with a diagnosis interface. The examiner corresponds the evaluation stage of Jantzen (pg. 8 last line - pg. 4 line 3) with the diagnosis interface of the claim.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jantzen as applied to claim 12 above, and further in view of Early (US 5,208,597).

In addition to the limitations previously listed Jantzen teaches the input stage has a means for synchronization (pg. 6 last full paragraph).

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Jantzen is silent the input stage has a means for filtering.

Early teaches filtering in order to remove unwanted noise before placing the signal on a bus (col. 6 lines 54-57).

Therefore it would have been obvious to one of ordinary skill in the art, having both Jantzen and Early before him/her and with the teachings [a] as shown by Jantzen, a method and apparatus for a redundant serial bus having $n > 1$ parallel bus lines for redundant networking of bus subscribers each having a single bus communications interface, and [b] as shown by Early, filtering in a bus environment, to be motivated to modify the system of Jantzen by placing a filter within the input stage. This would improve the system filtering will remove unwanted noise from the signal before it is placed on the bus.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jantzen as applied to claim 12 above, and further in view of Stein (US 5,946,294).

Although Jantzen teaches an input stage transmitting data to an evaluation stage and an output stage, the reference is silent on the input stage has means for serial / parallel conversion.

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Stein teaches a splitter within an input stage providing serial to parallel conversion (fig. 1 box Combiner/Splitter).

Therefore it would have been obvious to one of ordinary skill in the art, having both Jantzen and Stein before him/her and with the teachings [a] as shown by Jantzen, a method and apparatus for a redundant serial bus having $n > 1$ parallel bus lines for redundant networking of bus subscribers each having a single bus communications interface, and [b] as shown by Stein, a splitter within an input stage providing serial to parallel conversion, to be motivated to modify the system of Jantzen by including within the input stage a splitter for transmitting the data simultaneously to both the evaluation and output stages. This would improve the system since the data going to the output stage would not be delayed by the processing at the evaluation stage.

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jantzen and Stein as applied to claim 3 above, and further in view Kazecki (US 5,488,638)

Although Jantzen teaches plural parallel inputs, an evaluation stage and a single output, the reference is silent on parallel/serial conversion.

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Kazecki teaches a means for performing parallel/serial conversion (fig. 5 box 512). Note, examiner corresponds the comparator's two inputs with the parallel inputs of the claim.

Therefore it would have been obvious to one of ordinary skill in the art, having both Jantzen and Stein and Kazecki before him/her and with the teachings [a] as shown by Jantzen and Stein , a method and apparatus for a redundant serial bus having $n > 1$ parallel bus lines for redundant networking of bus subscribers each having a single bus communications interface, and [b] as shown by Kazecki , a means for performing parallel/serial conversion, to be motivated to modify the system of Jantzen and Stein by incorporating within the output stage of Jantzen the comparator of Kazecki. The inputs to the comparator would be the parallel outputs of the data traveling on busses 11 and 12 as well as the output from the evaluation stage. Based upon the result of the evaluation stage, the comparator would select one of the two input busses to output. This would improve the system by providing a means for outputting the better of the two input signals.

7. Claims 6 - 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jantzen as applied to claim 12 above, and further in view Meli (US 5,956,319).

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Although Jantzen teaches transmitting control data (col. 7 lines pg. 7 line 21), the reference is silent on the redundancy means which can be connected upstream can be permanently set to one bus line on the receiving side, as specified in claim 6 and the redundancy means which can be connected upstream can be permanently set to one bus line on the transmitting side, as specified in claim 7, and the driver muting the output, as specified in claim 8.

Meli teaches switching signals to a secondary line upon interruption of the primary line (col. 1 lines 59-61) that the examiner corresponds to permanently set to one bus line on the receiving/transmitting side, as specified in claims 7 and 8. Regarding the driver muting the output, the examiner corresponds this function with the limitation of claim 7.

Therefore it would have been obvious to one of ordinary skill in the art, having both Jantzen and Meli before him/her and with the teachings [a] as shown by Jantzen, a method and apparatus for a redundant serial bus having $n > 1$ parallel bus lines for redundant networking of bus subscribers each having a single bus communications interface, and [b] as shown by Meli, switching signals to a secondary line upon interruption of the primary line, to be motivated to modify the system of Jantzen by permanently choosing one line when the other line has failed.

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This modification can be performed in software by information the evaluation stage to always choose the line that has not failed and having the output stage mute the output on the failed line and only transmit to the line that has not failed. This would improve the system by ensuring that the failed line is not used until it is repaired.

8. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jantzen (DE 19,513,318) in view of Arecco (US 6,456,406).

Regarding claim 13, Jantzen teaches a method and apparatus for a redundant serial bus having $n > 1$ parallel bus lines for redundant networking (fig. 1 lines 11, 12, pg. 3 lines 1-3) of bus subscribers (fig. 1 box 23, 24, 25, 26) each having a single bus communications interface (fig. 1 box 26 has a single interface connecting it to box 36).

The system comprises a redundancy means (fig. 1 box 36), which can be connected upstream, having n interfaces for connection to said n parallel bus lines (fig. 1 see inputs from busses 11, 12 to box 36) and one interface for connection to the single bus communications interface of at least one bus subscriber (fig. 1 line see single connection between box 36 and

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subscriber 26). Note, redundancy means also exist for boxes 33-35.

The system comprises a redundancy means (fig. 1 box 36) which can be connected upstream having a receiving end comprising an input stage at least for each of said bus lines (fig. 1 box 36 input stage is for data coming from lines 11 and 12 to line 46), an evaluation stage (pg. 8 last line - pg. 4 line 3) and an output stage (fig. 1 box 36 output stage is for data coming to lines 11 and 12 from line 46) for all the bus lines.

The system comprises an evaluation stage has means for determining criteria of a data stream other than the presence or absence of data for a period of time and the content of said data stream for selecting one of the bus lines as the receiving line based on, said criteria (pg. 8 lines 3 - 7).

The system comprises a redundancy means that can be connected upstream having a transmitting end comprising a driver for each of said bus lines (fig. 1 box 33-36, pg. 6 lines 16-18).

Although Jansen teaches parallel bus lines, the reference fails to teach the steps of sending, during operation, identical message packets in parallel and at the same time to all of said bus lines; receiving the identical message packets on all of

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said bus lines in parallel by redundancy means which can be connected upstream; checking the determined criteria of the data streams of the received message packets; and selecting depending on the determined criteria, one of the bus lines, whose data streams is passed on to the connected bus subscriber.

Arecco teaches sending, during operation, identical message packets at the same time to all of the lines (fig. 1, col. 3 lines 5 - 12).

Arecco teaches receiving the identical message packets on all of the lines by redundancy means which can be connected upstream (fig. 1, col. 3 lines 5 - 12).

Arecco teaches checking the determined criteria of the data streams of the received message packets (col. 7 lines 50-60). Note, the examiner corresponds the determined criteria to be absence of the optical signal in Arecco.

Arecco teaches selecting depending on the determined criteria, one of the lines (col. 7 lines 50-60).

Therefore it would have been obvious to one of ordinary skill in the art, having both Jantzen and Arecco before him/her and with the teachings [a] as shown by Jantzen, a method and apparatus for a redundant serial bus having $n > 1$ parallel bus

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lines for redundant networking of bus subscribers each having a single bus communications interface, and [b] as shown by Arecco, sending, during operation, identical message packets at the same time to all of the lines, receiving the identical message packets on all of the lines by redundancy means which can be connected upstream, checking the determined criteria of the data streams of the received message packets, and selecting depending on the determined criteria, one of the lines to be motivated to modify the system of Jantzen in the following manner. First, identical message packets would be sent, simultaneously on all of the lines from the source to destination node. The destination node would check the received data streams for according to the determined criteria. Jantzen teaches the determined criteria to be transfer quality (pg. 7 last line - pg. 8 line 1). The active bus would be selected as long as the quality of data transfer on the active bus is acceptable. Jantzen explicitly teaches switching from the active bus only when the quality of the active bus is not acceptable (pg. 8 lines 2-4).

Regarding claim 14, sending and receiving message packets on bus lines in order to diagnose the redundant serial bus for a selected one of the at least one bus subscribers (Jantzen: col.

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7 lines pg. 7 lines 21-22). The examiner corresponds the control data of Jantzen (Jantzen: col. 7 lines pg. 7 line 21) with the message packets in order to diagnose the bus in the claim.

Response to Arguments

9. Applicant's arguments filed 8/10/2004 have been fully considered but they are not persuasive.

Regarding claims 12 and 13, the applicant argues that only the applicant teaches that the evaluation stage is part of the redundancy means (applicant: page 5 3rd paragraph, pg. 7 1st paragraph). The examiner disagrees. Both the examiner and the applicant agree that Jantzen teaches that monitoring is carried out on the active bus and the primary bus for the completeness and accuracy of the data (pg. 8 last line - pg. 9 line 3) (see applicants remarks page 5 3rd paragraph). Jantzen teaches a redundant serial bus having $n > 1$ parallel bus lines for redundant networking of bus subscribers each having a single bus communications interface. The claim language teaches an evaluation stage for selecting one of the bus lines as the receiving line. The only devices in the system of Jantzen connected to the $n > 1$ parallel bus lines are the redundancy means

(fig. 1 box 33-34). Therefore, the examiner maintains that evaluation is performed in the redundancy means.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ronald Abelson whose telephone number is (571) 272-3165. The examiner can normally be reached on M-F.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ra
Ronald Abelson
Examiner
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